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ward elastic reaction of the air becomes so great that the meteorite rebounds, but if the angle of the path is a high one, atmospheric friction and impact retard the meteoric velocity to so great an extent that gravity gets the victory, and the last part of the meteor's fall is vertical. If this conclusion is correct, there should be some evidence that bolides which strike the ground fall more often than not in a vertical direction. I am not aware that such evidence has been sought, or especially noted. The present instance is so well authenticated, that it seems worth putting on record. Subsequent investigation has proved that the fall of the meteorite occurred at about quarter before seven o'clock on the evening of Thursday, October 7, as witnessed by several people in Norwood.

FRANK W. VERY

WESTWOOD, MASS.,

October 12, 1909

#### A LABORATORY ILLUSTRATION OF BALL LIGHTNING

IN Dr. Elihu Thomson's address at the opening of the Palmer Physical Laboratory at Princeton University he made, with regard to ball lightning, the statement, "The difficulty here is that it is too accidental and rare for consistent study, and we have not as yet any laboratory phenomena which resemble it closely."<sup>1</sup> This suggested to me that a phenomenon which I witnessed some six or seven years ago might be worth recording.

With a copper wire a student accidentally short-circuited the terminals of an ordinary 110-volt circuit. I happened at the time to be a few meters from him and to be looking toward the terminals. At the instant of the short circuit I saw an incandescent ball which appeared to roll rather slowly from the terminals across the laboratory table and then disappeared. As I remember it, I should say that the ball may have appeared to be about three centimeters in diameter. I think no one else in the room saw anything more than a flash of light—much as if a fuse had blown. On the table where the ball had rolled we found a line of scorched spots, as if the ball had bounced along the table and had scorched the wood wherever it touched. As I remem-

ber them, these scorched spots were rather close together, perhaps not more than one or two centimeters apart. In the top of the table was a crack perhaps a millimeter or two wide, and at this crack the scorched line ended. In a drawer immediately under this crack we found a tiny copper ball, perhaps a millimeter in diameter. Apparently the ball that rolled along the table was incandescent copper vapor, although my memory of it is rather of a yellow-white than of a greenish light.

The above suggested the possibility of a laboratory study of a phenomenon which may very possibly be similar to that of ball lightning, but I have never attempted to repeat the experiment.

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#### BALL LIGHTNING

TO THE EDITOR OF SCIENCE: In the address on "Atmospheric Electricity" by Professor Elihu Thomson, on pages 867 to 868 in the issue of December 17, reference is made to lightning in the form of a ball of fire. This calls to my mind an experience which I had some fifteen years ago while watching a heavy electrical storm. I observed what appeared to be a ball of fire between two and three feet in diameter rolling along the street. It was also accompanied by several others of smaller size. This appearance occurred just after a very heavy electrical discharge to a telephone pole some few squares away. The discharge along the telephone wire heated the wire to red heat. The wire broke on account of this heating and a section of some considerable length was hurled along the street with a whirling motion. The rapidity of the rolling motion gave the appearance of a ball, as it also gave a forward motion to the ball of fire. Subsequent investigation revealed the two ends of the wire dangling from adjacent poles with a considerable length of the wire missing. I beg to suggest that the rapid heating of metal particles in some manner similar to this may be the cause of many of the so-called balls of lightning.

LOUIS M. POTTS

BALTIMORE, MD.,

January 10, 1910

<sup>1</sup> SCIENCE, XXX., p. 868, December 17, 1909.